Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	66720	"foot and mouth" or "hiv" or "human immunodeficiency" or rhinovirus	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 09:46
L2	67228	"foot and mouth" or "hiv" or "human immunodeficiency" or rhinovirus or "FMdv" or "hrv"	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 09:47
L3	67359	"foot and mouth" or "hiv" or "human immunodeficiency" or rhinovirus or "FMdv" or "hrv" or cpmv or "bean pod mottle virus" or bpmv or "cowpea mosaic virus"	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 10:22
L4	77269	lomonossoff.in. or johnson.in. or kumagai.in. or donson.in.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 09:48
L5	80163	lomonossoff.in. or johnson.in. or kumagai.in. or donson.in. or scale$.as.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 10:20
L6	2383	"coat protein" SAME "plant"	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 09:49
L7	67403	"foot and mouth" or "hiv" or "human immunodeficiency" or rhinovirus or "FMdv" or "hrv" or cpmv or "bean pod mottle virus" or bpmv or "cowpea mosaic virus" or comovirus	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 09:49
L8	107	l5 and l6	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 09:49
L9	81904	lomonossoff.in. or johnson.in. or kumagai.in. or donson.in. or scale$.as. or biogen$.as. or axis$.as.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 10:20
L10	49254	chimera or chimeric	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 10:21
L11	4210	l10 WITH (virus or viral)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 10:21

L12	2003	l11 and l3	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 10:22
L13	117	l12 and l6	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 10:29
L14	29	l6 SAME "loop"	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 10:32
L15	11	l10 and l14	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 10:29
L16	65	l9 and l10 and l6	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 10:32
L17	2769	"viral coat protein"	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 10:34
L18	61444	DNA WITH (target or foreign or insert or interest)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 10:34
L19	58	"viral coat protein" SAME (DNA WITH (target or foreign or insert or interest))	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 10:34
L20	247	plant WITH "viral coat protein"	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 10:34
L21	316	plant SAME "viral coat protein"	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 10:34
L22	1	(plant WITH "viral coat protein") or (plant SAME "viral coat protein") AND "library display"	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 10:34
L23	3490	"library display" or "display library"	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 10:34

L24	1	(plant WITH "viral coat protein") and "library display"	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 10:34
L25	11	(plant SAME "viral coat protein") and ("library display" or "display library")	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 10:34
L26	133	comovirus	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 10:34
L27	0	comovir?	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 10:34
L28	175	comovir$	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 10:34
L29	2	"5316931".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2005/03/07 10:34

	U	Document ID	Title
1	X	US 20040175694 A1	Production of peptides in plants as viral coat protein fusions
2	X	US 20040171813 A1	Process for isolating and purifying proteins and peptides from plant sources
3	X	US 20040170606 A1	Production of peptides in plants as viral coat protein fusions
4	X	US 20040166026 A1	Flexible processing apparatus for isolating and purifying viruses, soluble proteins and peptides from plant sources
5	X	US 20040040061 A1	Expression in plants of HIV-related proteins
6	X	US 20040033585 A1	Flexible vaccine assembly and vaccine delivery platform
7	X	US 20040005560 A1	Novel full-length cDNA
8	X	US 20030118596 A1	Production of a parvovirus vaccine in plants as viral coat protein fusions

	U	Document ID	Title
9	X	US 20030095986 A1	Production of a parvovirus vaccine in plants as viral coat protein fusions
10	X	US 20030050463 A1	Production of a parvovirus vaccine in plants as viral coat protein fusions
11	X	US 20030049813 A1	Process for isolating and purifying proteins and peptides from plant sources
12	X	US 20020192226 A1	Production of a parvovirus vaccine in plants as viral coat protein fusions
13	X	US 20020138207 A1	Flexible processing apparatus for isolating and purifying viruses, soluble proteins and peptides from plant sources
14	X	US 20020107387 A1	Production of peptides in plants as viral coat protein fusions
15	X	US 20020076692 A1	Ribosome display

	U	Document ID	Title
16	X	US 6740740 B2	Process for isolating and purifying proteins and peptides from plant sources
17	X	US 6730306 B1	Parvovirus vaccine as viral coat protein fusions
18	X	US 6660500 B2	Production of peptides in plants as viral coat protein fusions
19	X	US 6303779 B1	Process for isolating and purifying viruses and sugars from plant sources
20	X	US 6294711 B1	Gene expression in plants
21	X	US 6232099 B1	Method of producing a chimeric protein
22	X	US 6110466 A	Modified plant viruses as vectors
23	X	US 6037456 A	Process for isolating and purifying viruses, soluble proteins and peptides from plant sources
24	X	US 6033895 A	Process for isolating and purifying viruses, soluble proteins and peptides from plant sources

	U	Document ID	Title
25	X	US 5994526 A	Gene expression in plants
26	X	US 5977438 A	Production of peptides in plants as viral coat protein fusions
27	X	US 5958422 A	Modified plant viruses as vectors of heterologous peptides
28	X	US 5874087 A	Modified plant viruses as vectors
29	X	US 5736627 A	Virus resistant plants having coat protein

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     FILE 'MEDLINE, EMBASE, BIOSIS' ENTERED AT 11:08:09 ON 07 MAR 2005
L1         26938 S KUMAGAI?/AU OR DONSON?/AU OR LOMONOSSOFF?/AU OR PORTA?/AU OR
L2        449447 S "FOOT AND MOUTH" OR "HIV" OR "HUMAN IMMUNODEFICIENCY" OR RHIN
L3          9912 S (CHIMERA OR CHIMERIC) (P) VIRUS
L4           474 S "COAT PROTEIN" (P) LOOP
L5             1 S L1 AND L2 AND L3 AND L4
L6            18 S L1 AND L2 AND L3
L7           424 S L1 AND L2
L8             2 S L6 NOT PY>=1994
L9             1 DUP REM L8 (1 DUPLICATE REMOVED)
L10          124 S L4 NOT PY>=1994
L11           53 DUP REM L10 (71 DUPLICATES REMOVED)
L12        30248 S "ANTIGEN PRESENTATION" OR "PEPTIDE PRESENTATION"
L13            0 S L11 AND L12
L14            0 S VACCINE AND L11
L15       256190 S VACCINE
L16         1342 S L15 AND L3
L17         5628 S "PLANT VIRUS"
L18           37 S L17 AND L16
L19            0 S L18 NOT PY>=1995
L20          287 S L17 AND "RNA VIRUS"
L21           16 S L20 AND L2
L22            8 S L21 NOT PY>=1995
L23            6 DUP REM L22 (2 DUPLICATES REMOVED)
L24           21 S L1 AND L3
L25            8 S L24 NOT PY>=1995
L26            3 DUP REM L25 (5 DUPLICATES REMOVED)
L27          176 S L15 AND L1
L28           14 S L27 AND (L17 OR "RNA VIRUS" OR COMOVIRUS)
L29            3 S L28 NOT PY>=1995
L30            2 DUP REM L29 (1 DUPLICATE REMOVED)
```

L9 ANSWER 1 OF 1 MEDLINE on STN DUPLICATE 1
ACCESSION NUMBER: 92113564 MEDLINE
DOCUMENT NUMBER: PubMed ID: 1730936
TITLE: Expression of **cowpea mosaic** virus coat protein precursor in transgenic tobacco plants.
AUTHOR: Nida D L; Anjos J R; **Lomonossoff G P**; Ghabrial S A
CORPORATE SOURCE: Department of Plant Pathology, University of Kentucky, Lexington 40546.
SOURCE: Journal of general virology, (1992 Jan) 73 (Pt 1) 157-63. Journal code: 0077340. ISSN: 0022-1317.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199202
ENTRY DATE: Entered STN: 19920308
Last Updated on STN: 19970203
Entered Medline: 19920218

AB Tobacco, Nicotiana tabacum L., supports **cowpea mosaic virus** (**CPMV**) replication and cell-to-cell movement, and thus may serve as a model system to study coat protein-mediated protection against **CPMV**. A **chimeric** gene consisting of the cauliflower mosaic **virus** 35S promoter, **CPMV** 60K coat proteins-precursor (CP-P) coding region, and the nopaline synthase polyadenylation signal was transferred to tobacco cv. Burley 21 via the Agrobacterium tumefaciens binary vector system. Gene integration and expression in the transgenic tobacco plants were confirmed by Southern and RNA dot blot analyses. Accumulation of **CPMV** 60K CP-P in transgenic plants, up to 2 micrograms/g of wet weight tissue, was detected by ELISA and Western blots. The results of Western blots and immunosorbent electron microscopy further indicated that **CPMV** CP-P neither undergoes autoproteolysis to generate the mature viral coat proteins nor assembles into **virus**-like capsids, suggesting that processing of the CP-P may be required for **virus** assembly. Because **CPMV** neither induces symptoms in tobacco nor moves systemically, evaluation of the reactions of the transgenic plants to **virus** inoculation was based on **virus** accumulation in the inoculated leaves. Results from such infectivity experiments did not differentiate between CP-P expressers and vector-transformed plants. The transgenic tobacco plants expressing CP-P should provide valuable material for investigating **comovirus** polyprotein processing and capsid assembly in vivo.

=>

WER 1 OF 8 MEDLINE on STN
ACCESSION NUMBER: 94025586 MEDLINE
DOCUMENT NUMBER: PubMed ID: 7692669
TITLE: Expression of an animal virus antigenic site on the surface of a **plant virus** particle.
AUTHOR: Usha R; Rohll J B; Spall V E; Shanks M; Maule A J; Johnson J E; Lomonossoff G P
CORPORATE SOURCE: Department of Biological Sciences, Purdue University, West Lafayette, Indiana 47907.
SOURCE: Virology, (1993 Nov) 197 (1) 366-74.
Journal code: 0110674. ISSN: 0042-6822.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199311
ENTRY DATE: Entered STN: 19940117
Last Updated on STN: 19970203
Entered Medline: 19931122

AB To investigate if **cowpea mosaic** virus (**CPMV**) particles can be used to express foreign protein sequences, oligonucleotides encoding an epitope derived from VP1 of foot-and-mouth disease virus (**FMDV**) were cloned into the region of the **CPMV** genome encoding the small (S) coat protein. The chimeras were designed so that the foreign sequence was expressed either as an insertion or as a replacement for part of the wild-type sequence. While RNA from both chimeras was able to replicate in cowpea protoplasts only the construct containing the **FMDV** sequence as an insertion was able to direct capsid formation and infect whole cowpea plants. The modified S protein produced in plants infected with the insertion derivative reacted with **FMDV**-specific antiserum. These results show that **CPMV** can be used as an antigen presentation system and raises the possibility of producing vaccines in plants using a **RNA virus**-based vector.

L22 ANSWER 2 OF 8 EMBASE on STN
ACCESSION NUMBER: 93313580 EMBASE
DOCUMENT NUMBER: 1993313580
TITLE: Expression of an animal virus antigenic site on the surface of a **plant virus** particle.
AUTHOR: Usha R.; Rohll J.B.; Spall V.E.; Shanks M.; Maule A.J.; Johnson J.E.; Lomonossoff G.P.
CORPORATE SOURCE: Department of Virus Research, John Innes Institute, John Innes Centre, Colney Lane,Norwich NR4 7UH, United Kingdom
SOURCE: Virology, (1993) 197/1 (366-374).
ISSN: 0042-6822 CODEN: VIRLAX
COUNTRY: United States
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 004 Microbiology
026 Immunology, Serology and Transplantation
029 Clinical Biochemistry
037 Drug Literature Index
LANGUAGE: English
SUMMARY LANGUAGE: English

AB To investigate if **cowpea mosaic** virus (**CPMV**) particles can be used to express foreign protein sequences, oligonucleotides encoding an epitope derived from VP1 of **foot**-and-**mouth** disease virus (**FMDV**) were cloned into the region of the **CPMV** genome encoding the small (S) coat protein. The chimeras were designed so that the foreign sequence was expressed either as an insertion or as a replacement for part of the wild-type sequence. While RNA from both chimeras was able to replicate in cowpea protoplasts only the construct containing the **FMDV** sequence as an insertion was able to direct capsid formation and infect whole cowpea plants. The modified S protein produced in plants infected with the insertion derivative reacted with **FMDV**-specific antiserum. These results show that **CPMV** can be used as an antigen presentation

system and raises the possibility of producing vaccines in plants using a **RNA virus**-based vector.

L22 ANSWER 3 OF 8 EMBASE COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED. on STN

ACCESSION NUMBER: 93226175 EMBASE
DOCUMENT NUMBER: 1993226175
TITLE: Cis- and trans-acting elements in **cowpea mosaic** virus RNA replication.
AUTHOR: Van Bokhoven H.; Le Gall O.; Kasteel D.; Verver J.; Wellink J.; Van Kammen A.
CORPORATE SOURCE: Department of Molecular Biology, Agricultural University, Dreyenlaan 3,6703 HA Wageningen, Netherlands
SOURCE: Virology, (1993) 195/2 (377-386).
ISSN: 0042-6822 CODEN: VIRLAX
COUNTRY: United States
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 004 Microbiology
LANGUAGE: English
SUMMARY LANGUAGE: English

AB **Cowpea mosaic** virus (**CPMV**) B-RNA encodes the viral proteins required for viral RNA replication while M-RNA does so for the capsid proteins and functions required in cell-to-cell movement of the virus. Accordingly, B-RNA can replicate by itself, whereas M-RNA can only replicate in the presence of B-RNA. We have made heterologous sequence insertions at different positions in the open reading frame of B-RNA, leaving the 5' and 3' non-coding ends intact. None of these mutant B-RNAs were able to replicate. Furthermore, it was not possible to support replication of these mutant B-RNAs by co-inoculating wild-type B-RNA as a helper, indicating that B-RNA can not be replicated in trans. In contrast, replication of M-RNA must occur in trans, as the viral replicative proteins are encoded by B-RNA. Mutant M-RNA transcripts containing 5' and 3' non-coding regions of B-RNA are still efficiently replicated in protoplasts if co-inoculated with B-RNA, indicating that in cis or in trans replication of the **CPMV** RNAs is not primarily determined by the non-coding regions. Remarkably, for replication of M-RNA, the N-terminal domain of the 58K protein encoded by M-RNA was found to be required.

L22 ANSWER 4 OF 8 EMBASE COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED. on STN

ACCESSION NUMBER: 93014171 EMBASE
DOCUMENT NUMBER: 1993014171
TITLE: The nucleotide sequence of parsnip yellow fleck virus: A plant picorna-like virus.
AUTHOR: Turnbull-Ross A.D.; Reavy B.; Mayo M.A.; Murant A.F.
CORPORATE SOURCE: Scottish Crop Research Institute,Invergowrie, Dundee DD2 5DA, United Kingdom
SOURCE: Journal of General Virology, (1992) 73/12 (3203-3211).
ISSN: 0022-1317 CODEN: JGVIAY
COUNTRY: United Kingdom
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 004 Microbiology
LANGUAGE: English
SUMMARY LANGUAGE: English

AB The complete sequence of 9871 nucleotides (nts) of parsnip yellow fleck virus (PYFV; isolate P-121) was determined from cDNA clones and by direct sequencing of viral RNA. The RNA contains a large open reading frame between nts 279 and 9362 which encodes a polyprotein of 3027 amino acids with a calculated M(r) of 336212 (336K). A PYFV polyclonal antiserum reacted with the proteins expressed from phage carrying cDNA clones from the 5' half of the PYFV genome. Comparison of the polyprotein sequence of PYFV with other viral polyprotein sequences reveals similarities to the putative NTP-binding and RNA polymerase domains of **cowpea mosaic comovirus**, tomato black ring nepovirus and several animal picornaviruses. The 3' untranslated region of PYFV RNA is 509 nts long and does not have a poly(A) tail. The 3'-terminal 121 nts may form a stem-loop structure which resembles that formed in the genomic RNA

of mosquito-borne flaviviruses.

L22 ANSWER 5 OF 8 EMBASE COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED.
on STN
ACCESSION NUMBER: 92146738 EMBASE
DOCUMENT NUMBER: 1992146738
TITLE: Nucleotide sequence and genetic map of cowpea severe mosaic virus RNA 2 and comparisons with RNA 2 of other comoviruses.
AUTHOR: Chen X.; Bruening G.
CORPORATE SOURCE: Department of Plant Pathology, Agricultural/Envtl. Sciences College, University of California,Davis, CA 95616, United States
SOURCE: Virology, (1992) 187/2 (682-692).
ISSN: 0042-6822 CODEN: VIRLAX
COUNTRY: United States
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 004 Microbiology
LANGUAGE: English
SUMMARY LANGUAGE: English
AB We report the nucleotide sequence of cowpea severe mosaic **comovirus** (CPSMV) genomic RNA 2. The molecule is composed of 3732 nucleotide (nt) residues, exclusive of the polyadenylate at the 3' end. Only one of the six reading frame registers has a long open reading frame, from nt 255 to nt 3260 in the polarity of encapsidated RNA and corresponding to a polyprotein of 1002 amino acid residues (aa). As has been reported for other comoviruses, a second in-frame AUG, at nt position 531, apparently also initiates translation, at least in vitro. Multiple alignments of the deduced CPSMV polyprotein aa sequence with those of **bean pod mottle comovirus** (**BPMV**), **cowpea mosaic comovirus** (**CPMV**), and red clover mottle **comovirus** (RCMV) were consistent with a similar size for each of the three genes: the putative movement protein, beginning at the second in-frame AUG, the large coat protein (L), and the small coat protein. Identical nucleotide sequences in the terminal noncoding regions of RNA 2 of the four viruses are limited to 9 nt at the 5' end and the 3' polyadenylate. However, extensive similarities in sequence and potential structure were found. For all three genes and the 5' untranslated region, CPSMV and **BPMV** are more similar to each other than either is to **CPMV** or RCMV, the last two being similar to each other. Observed similarities predict that both cleavage sites in the CPSMV RNA 2 polyprotein are at glutamine-serine dipeptides. A sequence of 16 aa at the amino terminus of L, determined by automated Edman degradation, matched a region of the deduced aa sequence in the polyprotein and is consistent with cleavage at the predicted glutamine-serine dipeptide.

L22 ANSWER 6 OF 8 EMBASE COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED.
on STN
ACCESSION NUMBER: 91254806 EMBASE
DOCUMENT NUMBER: 1991254806
TITLE: Some highlights of virus research in 1990.
AUTHOR: Elliott R.M.; Crook N.E.; Desselberger U.; Hull R.; McGeoch D.J.
CORPORATE SOURCE: Institute of Virology, University of Glasgow, Church Street,Glasgow G11 5JR, United Kingdom
SOURCE: Journal of General Virology, (1991) 72/8 (1761-1779).
ISSN: 0022-1317 CODEN: JGVIAY
COUNTRY: United Kingdom
DOCUMENT TYPE: Journal; General Review
FILE SEGMENT: 047 Virology
LANGUAGE: English

L22 ANSWER 7 OF 8 EMBASE COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED.
on STN
ACCESSION NUMBER: 78186729 EMBASE
DOCUMENT NUMBER: 1978186729
TITLE: Polyamine content of several RNA plant viruses.

AUTHOR: Nickerson K.W.; Lane L.C.
CORPORATE SOURCE: Sch. Life Sci., Univ. Nebraska, Lincoln, Nebr. 68583, United States
SOURCE: Virology, (1977) 81/2 (455-459).
CODEN: VIRLAX
COUNTRY: United States
DOCUMENT TYPE: Journal
FILE SEGMENT: 047 Virology
016 Cancer
LANGUAGE: English
AB Three polyhedral viruses in the bromovirus group, brome mosaic virus, cowpea chlorotic mottle virus, and broad bean mottle virus, contain no detectable polyamines. Two other polyhedral viruses, turnip yellow mosaic virus and **cowpea mosaic** virus, contain roughly 1% spermidine by weight. The rod-shaped barley stripe mosaic virus contains no detectable polyamines.

L22 ANSWER 8 OF 8 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN
ACCESSION NUMBER: 1993:585952 BIOSIS
DOCUMENT NUMBER: PREV199497005322
TITLE: Expression of an animal virus antigenic site on the surface of a **plant virus** particle.
AUTHOR(S): Usha, Ramakrishnan [Reprint author]; Rohll, Jonathan B.; Spall, Valerie E.; Shanks, Michael; Maule, Andrew J.; Johnson, John E.; Lomonossoff, George P. [Reprint author]
CORPORATE SOURCE: Dep. Virus Res., John Innes Inst., John Innes Cent., Colney Lane, Norwich NR4 7UH, UK
SOURCE: Virology, (1993) Vol. 197, No. 1, pp. 366-374.
CODEN: VIRLAX. ISSN: 0042-6822.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 28 Dec 1993
Last Updated on STN: 28 Dec 1993
AB To investigate if **cowpea mosaic** virus (**CPMV**) particles can be used to express foreign protein sequences, oligonucleotides encoding an epitope derived from VP1 of foot-and-mouth disease virus (**FMDV**) were cloned into the region of the **CPMV** genome encoding the small (S) coat protein. The chimeras were designed so that the foreign sequence was expressed either as an insertion or as a replacement for part of the wild-type sequence. While RNA from both chimeras was able to replicate in cowpea protoplasts only the construct containing the **FMDV** sequence as an insertion was able to direct capsid formation and infect whole cowpea plants. The modified S protein produced in plants infected with the insertion derivative reacted with **FMDV**-specific antiserum. These results show that **CPMV** can be used as an antigen presentation system and raises the possibility of producing vaccines in plants using a **RNA virus**-based vector.

=>

ANSWER 1 OF 3 MEDLINE on STN DUPLICATE 1
ACCESSION NUMBER: 94303210 MEDLINE
DOCUMENT NUMBER: PubMed ID: 8030255
TITLE: Development of cowpea mosaic virus as a high-yielding system for the presentation of foreign peptides.
AUTHOR: **Porta C**; Spall V E; Loveland J; Johnson J E; Barker P J; **Lomonossoff G P**
CORPORATE SOURCE: Department of Virus Research, John Innes Institute, Norwich, United Kingdom.
SOURCE: Virology, (1994 Aug 1) 202 (2) 949-55.
Journal code: 0110674. ISSN: 0042-6822.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals; AIDS
ENTRY MONTH: 199408
ENTRY DATE: Entered STN: 19940818
Last Updated on STN: 19970203
Entered Medline: 19940811

AB It has recently been shown that cowpea plants can be infected with a cowpea mosaic **virus** (CPMV) **chimera** containing an antigenic site from foot-and-mouth disease **virus** (Usha et al., Virology 197, 366-374, 1993). Analysis of progeny RNA produced during such an infection has revealed that the inserted sequence is rapidly lost during serial passaging, probably by a process of homologous recombination. Using the information gained from this analysis, we have redesigned the chimeras in such a way that they are now genetically stable. The modified constructs have been used to obtain large quantities of purified **virus** particles expressing epitopes derived from human rhinovirus 14 (HRV-14) and human immunodeficiency **virus** type 1 (HIV-1). The **chimeric virus** particles possess the antigenic properties of the inserted sequence and, in the case of the HRV-14-derived construct, it has been shown that the inserted epitope is immunogenic in rabbits. These results demonstrate that CPMV can be used as a high-yielding system for the presentation of foreign peptide sequences.

L30 ANSWER 1 OF 2 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN
ACCESSION NUMBER: 1994:391197 BIOSIS
DOCUMENT NUMBER: PREV199497404197
TITLE: Development of cowpea mosaic virus as a high-yielding system for the presentation of foreign peptides.
AUTHOR(S): **Porta, Claudine** [Reprint author]; Spall, Valerie E. [Reprint author]; Loveland, Jane; Johnson, John E.; Barker, Pat J.; **Lomonossoff, George P.**
CORPORATE SOURCE: Dep. Virus Res., John Innes Inst., Colney Lane, Norwich NR4 7UH, UK
SOURCE: Virology, (1994) Vol. 202, No. 2, pp. 949-955.
CODEN: VIRLAX. ISSN: 0042-6822.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 14 Sep 1994
Last Updated on STN: 14 Sep 1994

AB It has recently been shown that cowpea plants can be infected with a cowpea mosaic virus (CPMV) chimera containing an antigenic site from foot-and-mouth disease virus (Usha et al., Virology 197, 366-374, 1993). Analysis of progeny RNA produced during such an infection has revealed that the inserted sequence is rapidly lost during serial passaging, probably by a process of homologous recombination. Using the information gained from this analysis, we have redesigned the chimeras in such a way that they are now genetically stable. The modified constructs have been used to obtain large quantities of purified virus particles expressing epitopes derived from human rhinovirus 14 (HRV-14) and human immunodeficiency virus type 1 (HIV-1). The chimeric virus particles possess the antigenic properties of the inserted sequence and, in the case of the HRV-14-derived construct, it has been shown that the inserted epitope is immunogenic in rabbits. These results demonstrate that CPMV can be used as a high-yielding system for the presentation of foreign peptide sequences.

L30 ANSWER 2 OF 2 EMBASE COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED. on STN DUPLICATE 1
ACCESSION NUMBER: 93313580 EMBASE
DOCUMENT NUMBER: 1993313580
TITLE: Expression of an animal virus antigenic site on the surface of a **plant virus** particle.
AUTHOR: **Usha R.; Rohll J.B.;** Spall V.E.; Shanks M.; **Maule A.J.;** Johnson J.E.; **Lomonossoff G.P.**
CORPORATE SOURCE: Department of Virus Research, John Innes Institute, John Innes Centre, Colney Lane,Norwich NR4 7UH, United Kingdom
SOURCE: Virology, (1993) 197/1 (366-374).
ISSN: 0042-6822 CODEN: VIRLAX
COUNTRY: United States
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 004 Microbiology
026 Immunology, Serology and Transplantation
029 Clinical Biochemistry
037 Drug Literature Index
LANGUAGE: English
SUMMARY LANGUAGE: English

AB To investigate if cowpea mosaic virus (CPMV) particles can be used to express foreign protein sequences, oligonucleotides encoding an epitope derived from VP1 of foot-and-mouth disease virus (FMDV) were cloned into the region of the CPMV genome encoding the small (S) coat protein. The chimeras were designed so that the foreign sequence was expressed either as an insertion or as a replacement for part of the wild-type sequence. While RNA from both chimeras was able to replicate in cowpea protoplasts only the construct containing the FMDV sequence as an insertion was able to direct capsid formation and infect whole cowpea plants. The modified S protein produced in plants infected with the insertion derivative reacted with FMDV-specific antiserum. These results show that CPMV can be used as an antigen presentation system and raises the possibility of producing vaccines in plants using a **RNA virus**-based vector.